Editorial Index for Volume 20 1988

INDEX OF ARTICLES

Air, Assessing the use of compressed ..... Nov p54
Air, How to control the recirculation of used ..... Oct p57
America, Rehabilitating railway tunnels in North ..... Nov p20
Angle indicators: Taking the guesswork out of drilling ..... Nov p35
Australia, Underground construction in (BTS) ..... Jul p51
Austria-Yugoslavia: Coping with stress gives Karawanken tunnellers a headache ..... Dec p19

Backbone, Ribs give tunnel ..... Oct p22
Backing-up a TBM ..... Oct p27
Belting-up for muck removal (Conveyors for muck transportation) ..... Oct p47
Birmingham Cathedral, Small tunnel, big impact at ..... May p59
Birmingham's water supply assured (Studley Tunnel) ..... Nov p39
Bits and cutters: A better bite for less money ..... Nov p43
Blasting Technology: Getting the right 'bang' in the right place at the right time ..... Sep p32
Bolts, Roofbolting rigs and ..... Jul p42
British marine running tunnels, Duplication for the (Channel Tunnel TBMs) ..... Nov p16
British tunnelling show returns to London ..... Apr p93

Cairo, Facing facts in (BTS) ..... June p49
Cairo Metro: Cut-and-cover ideas above their station ..... Mar p42
Calaveras hydro scheme, USA and Sydney's ocean outfalls ..... Apr p68
Calcutta: Avoiding pitfalls in metro construction ..... Jan p31
Canadian fixed link, Tunnel versus bridge for (Northumberland Strait) ..... Nov p50
Canadian rail tunnel, Both bore and blast used to excavate (Rogers Pass Tunnel) ..... Jan p37
Caracas Metro: Soft ground TBMs set a cracking pace in Caracas ..... Sep p25
Channel Tunnel TBMs: Duplication for the British marine running tunnels ..... Nov p16
Channel Tunnel TBMs: Soft ground TBMs under the sea ..... Dec p30
China completes its second longest railway tunnel ..... Apr p34
China, Excavating the Lubuge power tunnel in ..... Oct p44
China, Tunnelling in (BTS) ..... Sep p62
City extension, London Docklands Railway ..... Mar p18
Classification as a design aid in tunnelling, Rock mass ..... Jul p19
"Clause 12 is not in the best interests of the Client" (BTS debate) ..... May p53
Compressed air, Assessing the use of ..... Nov p54
Computer-controlled jumbo that really works! At last a ..... May p33
Conveyors for muck transportation ..... Oct p47
Cut-and-cover ideas above their station (Cairo Metro) ..... Mar p42
Cut holes save valuable time, Long ..... Nov p33
Cutters, Bits and ..... Nov p43

Debate (BTS): "Clause 12 is not in the best interests of the Client" ..... May p53
Deep shafts, Design and construction of (BTS) ..... Dec p43
Design aid in tunnelling, Rock mass classification as a ..... Jul p19
Design and construction of deep shafts (BTS) ..... Dec p43
Design criteria for an underground nuclear waste repository ..... Jun p53
Difficult terrain, Higokita road tunnel blasts through (Highway tunnelling in Japan) ..... Apr p21
Directional drilling: Computerised laser-aided guidance systems ..... Dec p55
Directional drilling: Computerised laser-aided guidance systems ..... Dec p55
Docklands railway City extension, London ..... Mar p18
Don Valley: Contract 3 moves forward to successful conclusion ..... Apr p49
Drilling, Directional: Computerised laser-aided guidance systems ..... Dec p55
Drilling, Taking the guesswork out of (angle indicators) ..... Nov p35
Dry using plastic membranes, Keeping tunnels ..... Oct p39
Dutch road tunnels, Safety measures reduce risk in ..... Jun p64

Energy comes to the surface, Underground (Tunnellers in conference) ..... May p24
Energy, Geothermal: Water from deep underground helps heat a British city ..... Oct p35
Excavating the Lubuge power tunnel in China ..... Oct p44

Fabric for tunnelling, Man-made fibres the (Geotextiles) ..... Sep p53
Face-to-face interview: Rough passage in India ..... May p38
Fibres the fabric for tunnelling, Man-made (Geotextiles) ..... Sep p53
Fire and rescue underground (BTS) ..... Jul p29
Fires in road tunnels, Ventilation: fighting (BTS) ..... Apr p55
Fixed link, Tunnel versus bridge for Canadian (Northumberland Strait) ..... Nov p50

Gaskets for immersed tubes, Rubber — Keeping your joints dry ..... May p42
Gassy ground, TBM protected in drive through ..... Jun p47
Geotechnical instrumentation for monitoring field performances (Book review) ..... Sep p50
Geotextiles: Man-made fibres the fabric for tunnelling ..... Sep p53
Geothermal energy: Water from deep underground helps heat a British city ..... Oct p35
Glensanda, Hardiness succeeds at ..... Dec p39
Golden Horn clean-up contributes valuable data: Roadheaders in Istanbul ..... Jun p41
Gran Sasso, TBM takes over at ..... Jul p47
Graz, Tunnel solution triumphs in: Plabutsch Bypass ..... Jun p20
Great Belt Link, Insurance dilemma of the ..... Sep p39
Ground investigation relating to tunnel tenders: Unpredictable to the core (BTS) ..... Jan p48
Guidance systems, Computerised laser-aided: Directional drilling ..... Dec p55

Hand mining saves Welsh rock tunnel drive ..... Oct p16
Herne Bay, Hands on in ..... Dec p41
Highway tunnelling in Japan: Fast drilling cuts a year off Kan-Etsu twinning ..... May p16
Higokita road tunnel blasts through difficult terrain (Highway tunnelling in Japan) ..... Apr p21
Houston Northside relief sewer: TBM in lost contract rescue ..... Jul p25
Hydraulic fluids, Lubricants and ..... May p45
Hydro scheme, Nedre Nea: Redesign captures more power from old plant ..... Nov p28
Hydropower station upgrading, Vinstra: Proven TBMs turn power up in Norway ..... Apr p41

Immersed Tubes: Part II, World List of ..... Apr p85
Immersed tubes, Rubber gaskets for — Keeping your joints dry ..... May p42
Infrastructural needs, International traffic and ..... May p27
Innovation is something new, When an: from practice to theory in tunnelling ..... Jul p35
Instrumentation for monitoring field performance, Geotechnical (Book Review) ..... Sep p50
Insurance dilemma of the Great Belt Link ..... Sep p39
Insurance, Tunnel: Who carries the can? ..... Jun p59
Interview, Face to face: Rough Passage in India ..... May p38
Island hopping takes another step, Norway's undersea ..... Oct p18
Istanbul, Roadheaders in: Golden Horn clean-up contribute valuable data ..... Jun p41
Italy, Railway pilot tunnels in: TBM tunnelling in poor and very poor rock conditions ..... Mar p22

Japan, Highway tunnelling in: Fast drilling cuts a year off Kan-Etsu twinning ..... May p16
Japan, Highway tunnelling in: Higokita road tunnel blasts through difficult terrain ..... Apr p21
Japan, Highway tunnelling in: Nakamura tunnel highlights NATM ..... Mar p47
Japanese mole crunches up 30cm boulders on Thurrock trunk sewer ..... May p41
Joints dry, Keeping your — rubber gaskets for immersed tubes ..... May p42
Jumbo that really works!" "At last a computer-controlled ..... May p33

Kan-Etsu twinning, Fast drilling cuts a year off (Highway tunnelling in Japan) ..... May p16
Karawanken tunnellers a headache, Coping with stress gives Austria-Yugoslavia ..... Dec p19

Laser-aided guidance systems, Computerised (Directional drilling ..... Dec p55
Lecture, 23rd Sir Julius Wernher memorial ..... Jul p35
Lesotho Highlands water project, The: South Africa tunnels to tap Lesotho's rivers ..... Apr p75
Lighting, Tunnel: Bright ideas reflect traffic needs ..... Mar p63
Limat River crossing: Icy reception suits roadheader down to the ground ..... Jan p19
London Docklands railway City extension ..... Mar p18
Long cut holes save valuable time ..... Nov p33
Los Angeles Metro: Car capital takes to the underground ..... Apr p27
Lubricants and hydraulic fluids: Success comes well oiled ..... May p45
Lubuge power tunnel in China, Excavating the ..... Oct p44
Lesotho's water resources, Optimising ..... Dec p38

Maltby mine, Sinking feeling speels success at ..... Jan p26
Marine running tunnels, Duplication for the British (Channel Tunnel TBMs) ..... Nov p16
Membranes, Keeping tunnels dry using plastic ..... Oct p39
Metro, Cairo: Cut-and-cover ideas above their station ..... Mar p42
Metro, Caracas: Soft ground TBMs set a cracking pace in Caracas ..... Sep p25
Metro construction, Avoiding pitfalls in (Calcutta) ..... Jan p31
Metro, Los Angeles: Car capital takes to the underground ..... Apr p27
Mine drift, Water bearing strata conquered in ..... Jan p41
Mine, Sinking feeling spells success at Maltby ..... Jan p26
Mines, NATM recipe for better roadways in ..... Dec p33
Mining and tunnelling techniques for in-situ oil recovery, Underground ..... Sep p41
Mining saves Welsh rock tunnel drive, Hand ..... Oct p16
Mole crunches up 30cm boulders on Thurrock trunk sewer, Japanese ..... May p41
Monitoring field performance, Geotechnical instrumentation for (Book Review) ..... Sep p50
Montreal sewer job, Friction rock stabilisers aid ..... Nov p38
Muck transportation, Conveyors for ..... Oct p47
Multipurpose modules for flexibility at work (Muck) ..... Dec p34

Nakamura tunnel highlights NATM: Highway tunnelling in Japan ..... Mar p47
NATM downfall, Avoiding an ..... Jun p32
NATM, Nakamura tunnel highlights: Highway tunnelling in Japan ..... Mar p47
(Navajo Dam) Drainage tunnel eases pressure on a leaking dam ..... Jan p22
NATM recipe for better roadways in mines ..... Dec p33
Nedre Nea hydro scheme ..... Nov p28
Northumberland Strait: Tunnel versus bridge for Canadian fixed link ..... Nov p50
Norway, Proven TBMs turn power up in: Vinstra hydropower station upgrading ..... Apr p41
Norway, Undersea tunnels in: a state-of-the-art review ..... Sep p18
Norway's undersea island hopping takes another step ..... Oct p18
Nuclear waste repository, Design criteria for an underground ..... Jun p53

Ocean outfalls, Calaveras hydro scheme, USA and Sydney's ..... Apr p68
Oil recovery, Underground mining and tunnelling techniques for in-situ ..... Sep p41
Oiled, Success comes well (Lubricants and hydraulic fluids) ..... May p45

Performance, Geotechnical instrumentation for monitoring field (Book review) ..... Sep p50
Pilot tunnels in Italy, Railway: TBM tunnelling in poor and very poor rock conditions ..... Mar p22
Plabutsch Bypass: Tunnel solution triumphs in Graz ..... Jun p20
Plastic membranes, Keeping tunnels dry using ..... Oct p39
Poor and very poor rock conditions, TBM tunnelling in: Railway pilot tunnels in Italy ..... Mar p22
Pumps, Submersible and slurry: Keeping a head of pressure ..... Jun p75

Railway tunnel, China completes its second longest ..... Apr p34
Railway tunnels in North America, Rehabilitating ..... Nov p20
Recirculation of used air, How to control the ..... Oct p57
Redesign captures more power from old plant (Nedre Nea hydro scheme) ..... Nov 28
Refurbishment and renovation, Tunnel: Renewal reaps rewards ..... Jan p53
Rehabilitating railway tunnels in North America ..... Nov p20
Rehabilitation encourages innovation, Tunnel (Sacramento water supply tunnel) ..... May p21
Renovation, Tunnel refurbishment and: Renewal reaps rewards ..... Jan p53
Repository, Design criteria for an underground nuclear waste ..... Jun p53
Rescue underground, Fire and (BTS) ..... Jul p29

Ribs give tunnel backbone ..... Oct p22
Rigs and bolts, Roofbolting: Support is booming ..... Jul p42
River crossing, Limat: Icy reception suits roadheader down to the ground ..... Jan p19
Roadheader down to the ground, Icy reception suits (Limat River crossing) ..... Jan p19
Roadheaders in Istanbul: Golden Horn clean-up contributes valuable data ..... Jun p41
Roadways in mines, NATM recipe for better ..... Dec p33
Rock mass classification as a design aid in tunnelling ..... Jul p19
Rock stabilisers aid Montreal sewer job, Friction ..... Nov p38
Rock tunnel drive, Hand mining saves Welsh ..... Oct p16
Rogers Pass Tunnel: Both bore and blast used to excavate Canadian rail tunnel ..... Jan p37
Roofbolting rigs and bolts: Support is booming ..... Jul p42

Sacramento water supply tunnel: Tunnel rehabilitation encourages innovation ..... May p21
Safety measures reduce risk in Dutch road tunnels ..... Jun p64
Seikan Tunnel — a personal view ..... Jul p33
Sewer, Houston Northside relief: TBM in lost contract rescue ..... Jul p25
Sewer, Japanese mole crunches up 30cm boulders on Thurrock trunk ..... May p41
Shafts, Design and construction of deep (BTS) ..... Dec p43
Shotcrete technology, Update on ..... Jan p43
Singapore MRT, A comparison of tunnelling methods adopted on the ..... Mar p31
Slurry pumps, Submersible and: Keeping a head of pressure ..... Jun p75
Soft ground TBMs set a cracking pace in Caracas (Caracas Metro) ..... Sep p25
South Africa tunnels to tap Lesotho's rivers (The Lesotho Highlands water project) ..... Apr p75
Spain, Underground works in ..... Jun p70
Stabilisers aid Montreal sewer job, Friction rock ..... Nov p38
Stress gives Karawanken tunnellers a headache, Coping with Austria-Yugoslavia ..... Dec p19
Studley Tunnel: Birmingham's water supply assured ..... Nov p39
Submersible and slurry pumps: Keeping a head of pressure ..... Jun p75
Sydney's ocean outfalls, Calaveras hydro scheme, USA and ..... Apr p68

TBM, Backing-up a ..... Oct p27
TBM in lost contract rescue (Houston Northside Relief Sewer) ..... Jul p25
TBM protected in drive through gassy ground ..... Jun p47
TBM takes over at Gran Sasso ..... Jul p47
TBM tunnelling in poor and very poor rock conditions: Railway pilot tunnels in Italy ..... Mar p22
TBMs, Channel Tunnel: Duplication for the British marine running tunnels ..... Nov p16
TBMs, Channel Tunnel: Soft ground TBMs under the sea ..... Dec p30
TBMs set a cracking pace in Caracas, Soft ground (Caracas Metro) ..... Sep p25
TBMs turn power up in Norway, Proven: Vinstra hydropower station upgrading ..... Apr p41
Tenders, Ground investigation relating to tunnel: Unpredictable to the core (BTS) ..... Jan p48
Thurrock trunk sewer, Japanese mole crunches up 30cm boulders on ..... May p41
Time, Long cut holes save valuable ..... Nov p33
Traffic and infrastructural needs, International ..... May p27
Transportation, Conveyors for muck ..... Oct p47
Tunnelling Industry, Innovation and the Rise of the (Book Review) ..... Jul p49

Undersea island hopping takes another step, Norway's ..... Oct p18
Undersea tunnels in Norway: a state-of-the-art review ..... Sep p18

Ventilation, Auxiliary: How to control the recirculation of used air ..... Oct p57
Ventilation: fighting fires in road tunnels (BTS) ..... Apr p55
Vinstra hydropower station upgrading: Proven TBMs turn power up in Norway ..... Apr p41

Water bearing strata conquered in mine drift ..... Jan p41
Water project, The Lesotho Highlands: South Africa tunnels to tap Lesotho's rivers ..... Apr p75
Water resources, Optimising Lesotho's ..... Dec p38
Water supply assured, Birmingham's (Studley Tunnel) ..... Nov p39
Water supply tunnel, Sacramento (Tunnel rehabilitation encourages innovation) ..... May p21
Waterproofing, Tunnel: Keeping tunnels dry using plastic membranes ..... Oct p39
Welsh rock tunnel drive, Hand mining saves ..... Oct p16
Wernher memorial lecture, 23rd Sir Julius ..... Jul p35

Yugoslavia-Austria: Coping with stress gives Karawanken tunnellers a headache ..... Dec p19

INDEX OF AUTHORS

Auld, Dr A ..... Dec p43
Bieniawski, Z T ..... Jul p19
Bilgin, N ..... Jun p41
Bohlke, B M ..... Jun p53
Braun, W ..... Dec p33
Buchanan, J ..... Nov p54

Copsey, P ..... Mar p31
Cornejo, L ..... Jun p70
Culverwell, D R ..... Mar p53; Apr p85
Curtis, R E ..... Nov p50

Dahlo, T S ..... Sep p18
Degerlund, C ..... Sep p53

Fulker, M ..... Jan p31
Fullalove, S ..... Mar p69; Jul p59; Oct p61; Dec p59

Gardiner, A ..... Nov p35
Garrett, R ..... Jul p47
Gnilsen, R ..... Nov p50
Gonzales, G G ..... Jun p70
Grabe, Dr W ..... May p42

Haerter, Dr A ..... Apr p55
Hammer, T A ..... Sep p18
Hansmire, W H ..... Jan p37
Hawkins, Dr A B ..... Jan p48
Hulme, T ..... Mar p31
Hynes, M ..... May p53

Jones, M B ..... Jan p53

Kirkland, C ..... Jul p33
Kuesel, T R ..... Jan p37

Lama, R D ..... Oct p57
Lock, J ..... Mar p63, May p41, p45; Jun p75; Jul p42; Oct p47; Dec p55
Luhning, R W ..... Sep p41
Lukins, P ..... May p21

Madge, M ..... Sep p18
Martin, D V ..... Jan p26, p43; Mar p22, p47; Apr p21, p41, p93; May p16, p33; Sep p32; Oct p18, p35; Nov p33, p35; Dec p19, p34
Monsees, J E ..... Jun p53
Mulrenan, J ..... Sep p39
Musager, Dipl-Ing K ..... Jun p20

Nilsen, B ..... Sep p18

Oud, H J C ..... Jun p64

Parry, R ..... May p53

Qinghue, Z ..... Apr p34
Quqing, Prof G ..... Sep p62

Rechignac, R ..... Mar p42

Sauer, Dr G ..... Jul p35
Schlütter, A ..... Oct p39
Serrano, J M ..... Jun p70
Seyrek, T ..... Jun p41
Shahriar, K ..... Jun p41
Shengpei, W ..... Oct p44
Simpson, C ..... Jun p59
Smeplass, S ..... Sep p18
Smith, M ..... May p53
Stephenson, H G ..... Sep p41

Tarkoy, P J ..... Oct p27
Terlouw, Dr J C ..... May p27
Traherne, D ..... Apr p49; May p59

Van Robbroeck, T P C ..... Apr p75
Vutukuri, V S ..... Oct p57

Wagner, J ..... Oct p27
Wallis, S T ..... Jan p22, Apr p27; Jun p32; Jul p25; Sep p25; Oct p16; Nov p16, p28, p33; Nov p43; Dec p30, p41
Weber, B H ..... Jan p19
Weddell, T W ..... May p53
West, G Dr ..... Jul p49
Windsor, C R ..... Jul p51
Wyllie, D C ..... Nov p20
Zongyan, G ..... Oct p44

COMMENT

What you told us about ourselves! ..... Jan p5
The best of enemies ..... Feb p3
Floating the immersed tube option ..... Mar p5
Pitfalls for the project manager ..... Apr p5
In defence of protectionism ..... May p5
Blasting or boring? And now SEM! ..... Jun p5
Small scale but big benefits ..... Jul p5
No right royal road ..... Aug p3
One market: opportunity or threat? ..... Sep p5
Slow progress under the Channel ..... Oct p5
Winds of change ..... Nov p5
Fire down below ..... Dec p5

The Publisher, Editor and Staff of Tunnels & Tunnelling wish all their readers a Happy Christmas and a prosperous New Year